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ABSTRACT

This paper describes an investigation of procedures by which teachers can elicit objectives from students. A programmed course was written to develop competencies related to behavioral goal-setting. Four open-school teachers from each grade-cluster (1-4, 5-8, 9-12) were randomly assigned to two groups. Each teacher interviewed and established two goals and measures with three randomly selected students. After the experimental group completed the instructional program, both groups again interviewed three randomly selected students. The goals and measures were then independently rated by two judges. A review of mean scores indicated that while the pretest performance of the two groups was essentially the same, the posttest performance favored the experimental group. Analysis of individual scores indicated that each experimental teacher increased the number of measurable objectives elicited by two or more over the pretest; the largest gain of any control group teacher was an increase of one measurable objective. (Author/JD)

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PREPARING TEACHERS TO ELICIT BEHAVIORAL OBJECTIVES FROM STUDENTS

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ABSTRACT

Two trends, learner-directed and adult-managed educational programs, suggest the need for objectives in educational planning and for learner involvement; neither strategy incorporates a procedure for student expression of objectives in behavioral terms. This paper describes an investigation of procedures by which teachers can elicit objectives from students.

A programmed course was written to develop competencies related to behavioral goal-setting. Four open-school teachers from each grade-cluster (1-4, 5-8, 9-12) were randomly assigned to two groups. Each teacher interviewed and established two goals and measures with three randomly selected students. After the experimental group completed the instructional program, both groups again interviewed three randomly selected students. The goals and measures were then independently rated by two judges.

A three-factor, Condition (2) X Levels (3) X Trials (2), analysis of variance revealed that only the interaction of Conditions X Trials was significant ($< .05$). A review of mean scores indicated that while the pretest performance of the two groups was essentially the same, the posttest performance favored the experimental group. Analysis of individual scores indicated that each experimental teacher increased the number of measurable objectives elicited by two or more over the pretest; the largest gain of any control group teacher was an increase of one measurable objective.

Preparing Teachers to Elicit Behavioral Objectives from Students

As noted by Kohlberg and Mayer, "Without clear and rational educational goals, it becomes impossible to decide which educational programs achieve objectives of general import and which teach incidental facts and attitudes of dubious worth (1972, p. 449)." Two basic philosophies, while not necessarily dichotomous, are represented by responses as to which goals should be stressed. The technologist position assumes that what is important and, consequently, what should be learned, is a culturally given body of knowledge and rules (Kohlberg and Mayer, 1972; Popham, 1969). Logic would dictate that the individual student could not very well specify objectives for learning culturally relevant information of which he is unaware. The approach to the student, then, must involve a knowledgeable vehicle, e.g., a teacher, for establishing culturally relevant objectives and for assuming responsibility for the meeting of those objectives--adult-managed instruction.

In contrast, the progressive philosophy would suggest that education should facilitate a natural interaction between the student and his immediate as well as his global environment. Advocates of this position maintain that changes in the student's thinking occur as a consequence of involvement in experiential problem-solving situations. The needs of the student (objectives) are developmentally determined, with the educator assuming responsibility, not for dictating objectives, but rather for arranging environments and situations which will facilitate the student's development--learner-directed instruction.

Two current trends indicate that a true dichotomy does not exist and that features of both perspectives will ultimately be represented in a consolidated model: The types of objectives which are currently being examined

and developed by educators, and the emphasis on "humanistic" approaches which currently permeates large segments of professional literature.

Objectives are currently being specified in areas which would have been considered irrelevant in the traditional, adult-managed educational environment: Objectives have been prepared and procedures developed for sociodramatic play (Smilansky, 1968), for aesthetic education (Ecker, 1970), and for developing cooperation, independence, and mental agility (Bjerstedt, 1971).

Two general terms appearing in the literature represent the current interest in learner-directed instruction: Freedom and humanism. For example, Silber has suggested that the use of "technology" in conjunction with "freedom" to facilitate learning should be based on the learner having " . . . the right to choose, the ability to choose among options; or to create new options, and the options available (1972, p. 28)." Similarly, Morreau (1973) postulated thirteen characteristics achievable through the use of behavioral technology which would insure a humanistic environment. The need for increasing self-management has also been clearly expressed by Hively and Duncan: "Much of the work in which other management had predominated seems to have had little lasting effect. The more reciprocity and self-management are built into a community, the more lasting the effects may be (1972, p. 16)."

This data is not intended to suggest that differences do not continue to exist between "humanistic" and "behavioral" approaches. For example, when confronted with the problem of using standardized achievement tests to evaluate an open-education program having goals inconsistent with both the test and the testing procedure, DeRivera (1973) described several alternative procedures, but failed to incorporate objectives-referenced criterion measures based on learner goals. Similarly, Hively and Duncan observed the " . . . split in our current culture. Tough-minded, careful researchers working within a frame-work of other management, guided by data and scientific method, and serving

the goals of institutions, are squaring off against tender-minded humanitarians, serving individual goals, and working within a framework of reciprocity, but with little reliance on data or scientific method (1972, p. 15)."

That a gap exists is unquestioned. The question to be addressed is: How can the benefits of technology be humanistically incorporated into educational environments to provide for learner-directed, yet accountable, instructional systems?

The Behavioral Objective: A Point for Learner Entry

Since all educational planning and subsequent environmental development must be based on objectives, the setting of objectives must, in turn, be the point where change is initiated to integrate " . . . humanism and educational technology in the design of new learning environments (Rosove, 1972, p. 10)."

It is at this point that learner involvement must be assured. That there will be reluctance to do so is clearly evidenced by the current attitudes of educators described by Kapfer, " . . . we do not trust children, adolescents, young adults, or even mature adults whenever they are placed in school-type situations. For this reason, we do not permit them to make choices concerning what, when, how, and where they will learn (1970, p. 14)."

Further, as observed by Hively, Maxwell, Rabehi, Sension, and Lundin, "Procedures for [involving students, parents, and community interest groups in the selection of goals and the placing of priorities] . . . in a practical and effective way are one of the toughest problems in American educational policy (1973, p. 57)."

It is toward the resolution of these problems that the research to be described was directed: The development of a procedure by which individual students can provide input into their educational destiny and simultaneously establish

their competency for doing so in measurable, behavioral terms.

Definition of Objectives

When attempting to determine the relative value of behavioral objectives for instructional planning or, indeed, just how behavioral objectives might be developed, the educator who directs his attention to the existing literature is confronted with such generally used terms as terminal objectives, instructional objectives, enabling objectives, educational objectives, behavioral objectives or outcomes, and performance objectives or outcomes. Or, he might find more specific terminology such as macro- and micro-objectives (Stolurow and Brennan, 1968) or planning, informational, and educational objectives (Kibler, Barker, and Miles, 1970). To further confound the interested individual, many of these terms are used interchangeably to describe the same type of objective, or a single term is used by different authors to describe completely different types of objectives. Since this confusion of terminology also confounds discussions relevant to behavioral objectives, a precise, common definition is needed.

Kibler, et al. (1970) proposed five components to define a behavioral objective: Who will perform, the actual behavior, the result of the behavior, the relevant conditions under which it will occur, and the standard which will be used for evaluation. Combining this definition with that of Morreau (1970) a behavioral objective would be defined as follows:

1. The specification of the learner as differentiated from a class or group of learners.
2. A specific measurable response the learner will emit or a product of the learner's response.
3. A delineation of the stimulus conditions under which the response will occur.

4. A specific statement on the frequency, duration, or quality of the response which will be considered successful.

From a planning perspective, objectives including these components provide an individualized focus, a measurement index for evaluation, and a guide for teacher/student decision-making. Specifically, they provide information on the:

1. Limitations on activities to be used in meeting an objective.
2. Content of the materials the teacher must obtain or construct.
3. Procedures which will lead to the terminal behavior occurring under prespecified conditions.
4. Evaluation procedures by which the teacher will measure the student's terminal behavior.
5. Decision rules for determining when a student is prepared to progress to the next learning sequence.

While it is evident that behaviorally-stated objectives clearly serve a number of planning functions, three major objections to their use have been raised by advocates of learner-directed programming.

It has been suggested that through the use of behavioral objectives all students, regardless of individual differences, will be required to learn the same skills. Experience clearly indicates that, regardless of who sets the objectives, no two learners acquire only those skills specified by the program. However, there is a greater likelihood that students in programs where objectives are preset will be required to master the same skills regardless of their interest or need for those skills. The process of individual goal-setting provides a direct response to this objection, i.e., the goals each student selects to work toward can be his own--probably very different from those of other students.

Another assumption which has been raised is that goals are inflexible and, consequently, cannot respond to the changing interests of students.

There is little question that objectives defined by teachers or by the curriculum materials selected by teachers often do not provide a wide margin to accommodate student interests. However, the importance of student goal-setting, e.g., establishing behavioral objectives, is not intended to derive a rigid set of objectives which imply to the student, "This is it. Now that you know what you want to do, do it." Frequent goal-setting conferences, in fact, provide the student with the opportunity to assess his progress in reaching his goals, to identify problems he is having in meeting them, and to discuss changes in his thinking related to his objectives with a knowledgeable adult.

Finally, it has been assumed that establishing behavioral objectives will lead to the imposition of activities on students. It would be great if we all knew how to best pursue our objectives; unfortunately, it doesn't always work that way. Even adults frequently seek guidance in determining which activities will assist them and in identifying when they have made progress. Objectives need not be used as a means to force teacher-desired activities on students, but rather can serve as a source of discussion and a focal point for teacher guidance in instructing students to select their own activities--the intent is the student's; the teacher is the facilitator.

Instructional Programming for Teachers

Dr. Turnure has already described the research conducted to determine if students could state their objectives in behavioral terms. It should be noted that the student was only required to state a specific behavior and a procedure for measurement. It was assumed that, because the student may not

be extremely knowledgeable in a skill development area, he might require teacher assistance in establishing appropriate conditions and criterion-measures.

As noted by Dr. Turnure, the results of the first study indicated that if teachers present the identified questions related to goals and measures, students can state their goals in precise, behavioral terms or, at least, provide the basic content for measurable objectives. However, to effectively apply the questioning procedure, it is necessary that teachers be able to discriminate between behavioral and nonbehavioral statements, long-range and short-range goals, and measurable standards and nonmeasurable standards and be able to demonstrate four specific skills:

1. Reducing long-range goals to immediate (short-range) steps,
2. Restating general verbs as specific actions,
3. Restating general skill areas as specific behavioral steps, and
4. Stating alternative measures by which a behavior could be evaluated.

These discriminations and skills served as the core for the instructional program for teachers, i.e., basic rules and principles for eliciting objectives were developed around them.

Four steps were followed in the development of the instructional program:

1. Specification of criterion behavior.
2. Selection of a programming paradigm.
3. Specification and ordering of the principles.
4. Construction of frames.

Specification of Criterion Behavio

The desired terminal behavior was specified as follows:

> The teacher will elicit from randomly-selected students goals which include both a measurable behavior and a measure by which the behavior can be evaluated.

Selection of a Programming Paradigm

Evans, Homme, and Glaser (1962) developed a programming model, RULEG, which is particularily applicable to subject-areas where distinct rules (principles) have been identified. The RULEG model involves the sequential presentation of a series of rules and their accompanying examples. A component of a rule or of an example is systematically omitted, and the learner is required to complete the "statement" by writing the correct response.

The COREX (COmposite Ruleg EXtension, Morreau and Daley, 1972) model utilizes this "rule-example" presentation format. Incorporated into the sequence, however, are learner-selected responses using multiple-choice prompts and learner-constructed examples (applications of the rule). Because of the systematic progression from knowledge acquisition to simulated application which allows for generalization from the unique repertoire of the learner, the COREX programming model was selected for use in presenting the procedures for eliciting behavioral objectives.

Specification and Ordering of the Principles of Student Goal-Setting

The programmer identified and recorded the principles of student goal-setting based on the outcomes of the Phase I interviews and on his knowledge in the area of writing behavioral objectives. This procedure was followed by a review of the literature and the recording of additional principles. The basic principles identified in this manner were then evaluated by a subject-matter expert, a psychologist with a thorough knowledge of behavioral psychology and a background in student-directed educational programs.

A logical sequence was arranged so that principles on which other principles were dependent would be presented first. The principles were then reviewed to assure a sequential progression with no omitted steps. The following outline indicates the resulting composite content-sequence of the program of instruction

for teachers:

I. Introduction

II. Purposes of goal-setting

III. Goal-setting discussion

A. Types of goals

1. Long-range goals
2. Short-range goals

B. Components of specific goals

1. The action
2. The criterion-measure
3. The conditions

IV. Procedures for goal-setting conferences

A. Setting the stage

B. Stating an objective

1. The action
2. The criterion-measure
3. The conditions

C. Review

D. Practice

V. Instructional planning

A. Recording the objective

B. Specifying steps toward an objective

C. Selecting activities and materials

D. Evaluation

1. Setting a timeline
2. Self-evaluation
3. Teacher evaluation
4. Review
5. Practice

The Effects of Teacher Instruction

The primary question to be responded to by this study was, "Will teachers elicit more precise objectives from students after completion of an instructional program on goal-setting procedures?" Since one of the purposes of the research was primarily developmental, i.e., to identify weaknesses in the program and to evaluate its general effectiveness, a decision was made to test the program with a limited number of teachers. In addition, the study was intended to address the crucial questions of the generalizability of the procedure and the feasibility of teacher implementation.

Two major factors were identified as potential sources of variability in evaluating the effectiveness of the instructional program: Teacher attitude and the ages of the students interviewed. Each of these factors was considered in the research design.

The primary emphasis of the programmed course was deliberately placed on applying specific procedures to elicit objectives from students. In other words, while the procedure would be potentially applicable to any classroom (e.g., in regard to optional or free-time activities), the orientation was toward implementation initially in "learner-managed" environments where student involvement in curriculum-setting was already an accepted principle. Consequently, to avoid complicating the developmental test of the instructional program by incorporating teachers who might be attitudinally opposed to the general concept underlying the procedure, all teachers were selected from an open-school program whose 23 teacher-advisors had all been screened, in part, on the basis of their committment to fully individualized, self-expressed student programs.

The fact that teachers in an open school might already have acquired many of the skills required for eliciting objectives necessitated that a

control group be established. As noted by Hively, Maxwell, Rabehl, Sension, and Lundin (1973), "When one is primarily interested in finding out what the curriculum can do and whether it satisfied its own objectives, control groups are not useful. [However] . . . if there is a suspicion that some objectives of the curriculum might be met were no instruction given at all, then there might be value in choosing a group . . . who have not been taught that topic formally and testing their knowledge for comparison (p. 35-36)."

To control for the effects of students' ages, the two groups of teachers were subdivided by the age level of the students they advised: Lower--grades one through four, Middle--grades five through eight, and Upper--grades nine through twelve.

Subjects

Almost two years after Study I, the investigators returned to the same open school and randomly selected, from the 23 available advisor-teachers, four teachers from each of the three groups, i.e., lower, middle, and upper, assigning two teachers to the experimental group and two to the control group. The teachers in the open school had a large role in decisions related to expectations of them and their daily activities in regard to both teaching and advisory activities. Consequently, teachers were not required to participate in the experiment, nor was any administrative "pressure" placed on them to be involved. One teacher from the experimental/primary group withdrew from the experiment for lack of time and was replaced by random selection of a new teacher from that pool.

Three students were randomly selected from the advisees of each teacher involved in the study. To eliminate the possible effects of student experience in goal-setting conferences, no student who had participated in Study I was included in the sample.

Procedure

The teachers were asked to interview the three students, to assist them in setting goals, and to record the results of the goal-setting conferences on a form similar to one used in the school at that time.

After all teachers had completed the interviews with the selected students, teachers in the experimental group were asked to complete an instructional program, Student Goal-Setting (Morreau & Turnure, Note 1). Consistent with the design of the materials, the teachers were asked to complete the program at their own pace.

When the programs from the six teachers were completed and submitted to the investigators, three students were randomly selected from the remaining advisees of each teacher in both the experimental and control groups and goal-setting interviews again were conducted.

Results

Two judges independently rated each response in terms of criteria based on the types of goals which might be derived in a goal-setting conference and their relative usefulness for educational planning. Pearson Product-Moment correlations computed on the two judges' ratings of the pre- and posttest objectives elicited by each of the 12 teachers ranged from 1.00 to .77, with the median correlations being .95.

The criteria for evaluating the student responses were stated as follows:

Objectives:

4 - Measurable action; short-term goal

3 - Nonmeasurable, modifiable action; short-term goal

2 - Measurable action; long-term goal

1 - Nonmeasurable, nonmodifiable action; short-term or long-term goal

0 - No goal elicited

Short-term goal -- student could reasonably complete during a school year.

Long-term goal -- student could not reasonably complete during a school year.

Measurable action -- if ten people saw it, all would agree as to what had occurred.

Modifiable action -- nonmeasurable as stated, but could be modified by the teacher without losing the student's intent.

Measures:

2 - Appropriate for action; standards could be set for

1 - Appropriate for action; standards could <u>not</u> be set for

OR

Inappropriate to action; standards could be set for

0 - No evaluation elicited

Appropriate -- the action could be measured using the procedure.

Standards could be set -- a precise quantity of performance could be specified.

The primary purpose of the research in Study II was to determine if teachers completing an instructional program on the derived goal-setting procedures could elicit precise objectives. The analysis of the program was based on the pretest and posttest performance of experimental and control teachers from primary, middle, and upper grades in an open school.

Eliciting two goals from each of three students, each teacher-subject could achieve a maximum score of 36. The scores of all students interviewed by each teacher in both groups were tallied to create a composite score and a three-factor 2(Experimental vs. Control) X 3(Primary, Middle, Upper) X 2(Pre vs. Posttest) analysis of variance was completed on the data. The analysis of variance revealed that only the interaction of Conditions X Trials was significant ($p < .05$) indicating that performance across trials was different for the two groups, i.e., the ability to elicit behavioral objectives was influenced

by instruction (See Table 1).

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Insert Table 1 here

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A review of the mean scores (See Table 1) indicated that the performance of the experimental group was markedly improved by instruction, as contrasted to a 1.3 point decrease by the control group. An additional analysis was completed to determine the number of complete objectives, i.e., objectives including both a measurable behavior and an adequate measure, elicited by each teacher in the experimental and control groups on the pretest and posttest. The analysis indicated that each teacher in the experimental group increased the number of elicited objectives meeting both criteria on the posttest by two or more over pretest performance. The largest gain of any teacher from the control group was an increase over pretest performance of one objective meeting both criteria. The performance of other control group teachers either remained constant or showed a decrease from the pretest to the posttest.

Inservice and preservice programs should be efficient as well as effective. Teachers in the experimental group completed the instructional program over a three-week period. The actual time required to complete the program varied from 2 hours to 4.5 hours with the average time for completion being 2.8 hours.

Discussion

The results of Study I demonstrated that a large majority of children from five through eighteen years of age, the entire school-age span, could state an educational goal and standard of achievement in behavioral terms under appropriate eliciting conditions. The Study II field test indicated that, after instruction via a programmed course, teachers were able to effect-

ively apply the procedures in eliciting behaviorally-stated objectives from their students.

Combs (1973) stated that "the humanist approaching educational accountability finds himself in a difficult spot. On one hand he finds it necessary to resist the distortions produced by preoccupation with performance-based criteria as educational outcomes . . . . On the other hand, the humanist finds himself unprepared to offer immediate or simple solutions to the processes of accountability (p. 19)." The present research would suggest that the problem need not go unresolved -- what could possibly have more meaning to a learner than his personal objectives and what better source of accountability than learner objectives stated in behavioral terms; not a rigid set of imposed objectives, but rather a flexible, changing set of guides which reflect how the learner "sees himself, how he sees the world in which he is moving, and the purpose he has in mind (Combs, 1973, p. 19)."

While contributing to the resolution of the accountability problem in learner-selected programs is a significant outcome, the most important result of the investigation is the potential of the procedure for establishing program objectives with learner involvement -- a problem which has been consistently confronted by curriculum developers (McNeil, 1969; Tyler, 1950). If systematically applied, individualized objectives can be derived for all students, thereby, providing the structure for curriculum development and planning, e.g., given behaviorally-stated objectives teachers can bring their expertise to bear in guiding students in setting priorities, selecting activities, and sequencing experiences. Further, as indicated by the examples which follow, many of the advantages attributed to objectives-based programming might be realized in a learner-selected program.

Effective selection of experiences. The student in a self-selected program may be limited by a narrow repertoire of personal experiences which suggest the means for meeting his objectives. In view of this, the best alternative is a cooperative student-teacher selection of activities, a natural outcome of goal-setting conferences. While it would be highly improbable that a teacher would propose appropriate environments or experiences for a learner based on an objective statement which is nonexistant or open to a variety of interpretations, teachers could assist students in arranging appropriate experiences if the outcome was stated in measurable terms. For example, a student's objective "to report on the present conditions of American Indians," might be met through activities related to the specified outcome:

a. Read ____(books) about American Indians.

b. View ____(films) about American Indians.

c. Attend "Pipestone" class.

d. Visit _____Reservation.

These experiences, with teacher input as to sources and/or titles of books and films, would decidedly assist the student in achieving an appropriate perspective on his topic and expeditiously enable him to prepare a written presentation.

Objective-based evaluation. The concept of student-directed education suggests that students should be involved not only in the selection and completion of activities, but also in the procedures by which activities will be evaluated. Consequently, the guidelines for assessing student progress should clearly match the guidelines for instructional practices. Students should:

1. Be involved in establishing criteria for success--it is their success, not the success of the school.

2. Not be evaluated by presentation of a set of items which purport to assess entire skill areas--students should be responsible

for their present, personal objectives, not for arbitrarily scheduled areas and rates of knowledge acquisition. Further, there is little advantage to displaying performance on many items at the same time.

3. Be evaluated as an on-going part of their activities, not in a testing situation per se--evaluation should be a relevant part of on-going activities, not an activity in itself.

4. Not be evaluated using normative base tests--students set their goals and should not be expected to perform at a preset level on items based on externally derived goals.

There is little question that students profit from seeing their progress in subject-matter areas. Systematic assessment not only provides a student with feedback as to how well he is doing in a given subject area (short-term goals), but it also provides a student with information related to his status across all areas (general goals). Further, the results of objective-based evaluation provide the student and the teacher with necessary information for building activities, for selecting experiences, and for determining when activities are successful. In other words, an evaluation strategy must be built which is on-going, i.e., part of the student's daily activities, and which is objective-based, i.e., directly tied to the student's objectives.

Progress indicators. An effective model for the evaluation of student-directed programs has not been developed. Even nonstandardized measures of student performance are often based on objectives which would be irrelevant to students and which would require presentation as a testing experience as contrasted to a situationally relevant activity. The use of student-stated objectives for the development of individualized assessment devices may resolve this quandry. For example, if a set of behavioral objectives for a given subject-matter area could be generated and sequenced using available objectives and, if criterion items could be attached to each objective, student objectives could be matched to the set and an evaluation procedure could be specified

in advance. In the area of reading a student may state that he would like to read a certain type of book. The teacher, then, could determine the approximate level of that book and select comprehension and vocabulary questions which would indicate that the objective had been met. In math, a student who stated that he would like to be able to multiply a certain type of problem could be provided with criterion items which would demonstrate mastery to use as a study guide while pursuing his objective and as a criteria check when he felt the skill had been mastered.

As the student successfully completed criterion items matched to the sequence of objectives, his progress could be recorded on a comprehensive list--indicating the student's overall, individual progress across the total subject-matter area and over time. Such general listings of objectives and matched criterion items could be developed in the areas of mathematics, reading, and writing skills; more specific lists could be generated for each of the other subject-matter areas. The availability of sequenced objectives would provide not only for the matching of student objectives to selected criterion items but would also provide an alternative to both teacher-imposed and teacher-elicited objectives--students could review an objectives sequence and select those which they feel are relevant to them.

Such sequences would also be important for the selection of activities by students. Abilities which have traditionally been thought of as "basic skills" could be taught not as irrelevant entities, but rather integrated and coordinated into a cluster which is centered around the student's objective. For example, a student may want to "build a model car in shop." The instructor could assist the student in selecting activities that would insure development of measurement skills, computational skills, reading skills, mechanical skills, etc. To do so, however, the instructor must have rapid access to information describing where the individual student is prepared to begin in

each of the related areas--recording of progress by objectives may provide the key.

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TABLE 1
MEAN SCORES ON THE PRE AND POSTEST
FOR THE EXPERIMENTAL AND CONTROL GROUPS

Condition	Level	Trial			
		Pretest		Postest	
		Level $\bar{x}$	Condition $\bar{x}$	Level $\bar{x}$	Condition $\bar{x}$
Experimental	Primary	30.5	27.8	35	32.3
	Middle	27.5		32	
	Upper	25.5		30	
Control	Primary	29	28.3	29	27.0
	Middle	25.5		22	
	Upper	30.5		30	